CHEMISTRY · NEW HAMPSHIRE

Chemistry

Practice Test

Unit 4: Gases, Thermodynamics, and Equilibrium

25 Questions

Original practice test based on the New Hampshire curriculum. Work through each question, then check your answers at the end.

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button to let Brett know so he can fix it.

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Question 1

According to Boyle law, at constant temperature, when gas pressure increases, volume

A) increases

B) decreases

C) stays the same

D) becomes zero

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Question 2

A gas at 100 kPa occupies 6 L. At the same temperature, at 200 kPa, its volume, in liters, is ____

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Question 3

According to Charles law, at constant pressure, when Kelvin temperature increases, volume

A) increases

B) decreases

C) stays the same

D) becomes zero

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Question 4

A gas occupies 2 L at 300 K. At constant pressure, at 600 K, its volume, in liters, is ____

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Question 5

At constant volume, gas pressure is directly proportional to

A) mass

B) density

C) Kelvin temperature

D) Celsius temperature

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Question 6

A gas at 100 kPa and 300 K is heated to 600 K at constant volume. Its new pressure, in kilopascals, is

____

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Question 7

Kinetic molecular theory describes gas particles as

A) fixed in a lattice

B) always bonded together

C) moving slowly in straight lines only

D) in constant random motion with large spaces between them

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Question 8

A gas mixture has partial pressures of 120 kPa and 180 kPa. The total pressure, in kilopascals, is ____

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Question 9

At standard temperature and pressure, the volume, in liters, of 2 mol of gas is ____

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Question 10

For an exothermic reaction, the enthalpy change is

A) positive

B) negative

C) zero

D) undefined

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Question 11

In an endothermic reaction, heat is

A) released and the surroundings warm

B) released and the surroundings cool

C) absorbed and the surroundings cool

D) absorbed and the surroundings warm

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Question 12

Using $c = 4.2$ J per gram per degree Celsius, the heat, in joules, absorbed by 100 g of water warmed by 10 degrees Celsius is ____

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Question 13

Adding more reactant to a system at equilibrium shifts the equilibrium

A) to the left

B) to neither side

C) to the right only if a catalyst is present

D) to the right

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Question 14

A catalyst in a reversible reaction

A) shifts equilibrium to the products

B) speeds up both forward and reverse reactions without changing the equilibrium position

C) shifts equilibrium to the reactants

D) changes the equilibrium constant

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Question 15

A gas at 200 kPa occupies 4 L. At the same temperature, at 100 kPa, its volume, in liters, is ____

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Question 16

At equilibrium, the forward and reverse reaction rates are

A) both zero

B) forward only

C) equal, while concentrations stay constant

D) reverse only

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Question 17

For $N_2 + 3\,H_2 \rightleftharpoons 2\,NH_3$,

increasing pressure shifts equilibrium to the

A) right, toward fewer moles of gas

B) left, toward more moles of gas

C) neither side

D) right, toward more moles of gas

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Question 18

A gas mixture has total pressure 500 kPa, and one gas has partial pressure 200 kPa. The mole fraction of that gas is ____

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Question 19

Entropy increases when a solid

A) freezes

B) condenses

C) crystallizes

D) melts

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Question 20

Using $c = 4.2$ J per gram per degree Celsius, the heat, in joules, absorbed by 50 g of water warmed by 10 degrees Celsius is ____

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Question 21

A large equilibrium constant means the equilibrium mixture favors the

A) reactants

B) products

C) catalyst

D) solvent

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Question 22

A gas occupies 6 L at 546 K. At constant pressure, at 273 K, its volume, in liters, is ____

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Question 23

In an exothermic reaction, the surroundings

A) cool down

B) stay at the same temperature

C) warm up

D) lose all heat

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Question 24

Heating an endothermic reaction at equilibrium shifts equilibrium toward the

A) products

B) reactants

C) catalyst

D) neither side

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Question 25

A gas at 150 kPa occupies 4 L. At the same temperature, at 300 kPa, its volume, in liters, is ____

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ANSWER KEY

1. B
2. 3
3. A
4. 4
5. C
6. 200
7. D
8. 300
9. 44.8
10. B
11. C
12. 4200
13. D
14. B
15. 8
16. C
17. A
18. 0.4
19. D
20. 2100
21. B
22. 3
23. C
24. A
25. 2

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